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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,654	07/01/2003	Martin Sauerland	22514	2013

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THE FIRM OF KARL F ROSS
5676 RIVERDALE AVENUE
PO BOX 900
RIVERDALE (BRONX), NY 10471-0900

EXAMINER	
LE, TOAN M	

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/611,654	SAUERLAND ET AL.	
	Examiner	Art Unit	
	Toan M Le	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 July 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/29/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-19 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 5-6, 13, 15, and 19 of copending Application No. **10/453917**. A comparison of the claims is presented on the table below:

Copending Application 10/453,917	Instant Application 10/611,654
13. The method defined in claim 1 wherein the calculation of eccentricity of the hollow billet in step (d) includes determining a pattern of a wall thickness (s) of the hollow billet as a function of a longitudinal coordinate (z) in a direction of the longitudinal axis of the hollow billet and an angle Φ around the longitudinal axis in accordance with the relationship $S(\Phi, z) = s_o(z) + s_1(z) \cos(\Phi+\delta(z))$ where s_o is the mean wall thickness of the hollow billet, s_1 is the wall thickness amplitude superimposed on the mean wall thickness s_o and δ is the angular position as a function of the longitudinal coordinate (z) of the wall thickness, and subjecting the result to a Fourier transformation to obtain a course of the wall thickness as a function of the longitudinal coordinate (z) and the angular position Φ to an approximation of the form $s(\Phi,z) \approx s_o^* + \Sigma s_{i,1} \cos(\Phi + 2\pi p_i z + \xi_{i,1})$ wherein s_o^* and $s_{i,1}$ are determined Fourier coefficients in the thickness of the hollow billet by a summation (i) over the number (n) of the elements of Fourier series and p_i and $\xi_{i,1}$ represent the Fourier coefficients for the pitch and for the starting position angle from summation (i) over the number (n) of the Fourier series elements, the frequency transformation being a consideration of the movement of the measuring head.	1. A method of determining eccentricity (e) of a hollow billet in the course of rolling, comprising the steps of: (a) advancing the hollow billet in a direction along a longitudinal axis (L) of the hollow billet past at least one measuring device provided to detect the wall thickness (s) of the hollow billet at a position (z) along its length and at an angular position (Φ) thereof or a position along its circumference; (b) approximating a course of the eccentricity (e) of the hollow billet by the course of the wall thickness (s) as a function of the longitudinal coordinate (z) extending along the longitudinal axis (L) of the hollow billet and the angle (Φ) about the longitudinal axis in accordance with the relationship: $e \sigma s(\Phi,z) = s_o(z) + s_1(z) \cos(\Phi+\delta(z))$ where s_o is the mean wall thickness of the hollow billet, s_1 is the wall thickness amplitude superimposed on the mean wall thickness and δ is the angular position as a function of the longitudinal coordinate (z); and (c) upon passage of the hollow billet past said measuring device taking a number of wall thickness measurements, feeding the measured values to a computer, and subjecting the measured values in said computer based upon said approximation to a Fourier transformation to obtain a functional course of the wall thickness (s) as a function of the longitudinal coordinate (z) and the angle (Φ) of the form: $s(\Phi,z) \approx s_o^* + \Sigma s_{i,1} \cos(\Phi + 2\pi p_i z + \xi_{i,1})$ where s_o^* and $s_{i,1}$ are determined Fourier coefficients for the wall thickness of the hollow billet upon summation (i) over the number (n) of Fourier series elements and whereby p_i and $\xi_{i,1}$ are the Fourier coefficients for a pitch of the course of the eccentricity and for the starting angular position of the measurements upon summation (i) over the number (n) of Fourier series elements.
6. The method defined in claim 1 wherein the eccentricity is measured at the outlet of an inclined-roll rolling mill.	2. The method defined in claim 1 wherein the measurements are taken upstream of a rolling mill following an inclined-roll mill. 3. the method defined in claim 2 wherein the measurements are taken at an upstream side of a conti-rolling lines. 4. The method defined in claim 2 wherein the measurements are taken at an upstream side of a press-bench rolling lines.
5. The method defined in claim 1 wherein said measuring device is displaced in step c) along said longitudinal axis and in a direction about a periphery of said hollow billet.	5. The method defined in claim 2 wherein the hollow billet is maintained against rotation about said longitudinal axis (L) during taking of the measurement.
19. The apparatus defined in claim 18 wherein said measuring device includes **means for generating an ultrasonic pulse in said hollow billet** and comprising a flash lamp pumped Nd:YAG laser.	6. The method defined in claim 2 wherein the wall thickness of the hollow billet is measured by a laser ultrasound process. 7. The method defined in claim 2 wherein the wall thickness is measured by **a tool inserted into said hollow billet**. 8. The method defined in claim 7 wherein **said tool is a mandrel**.

13. The **method** defined in claim 1 wherein the calculation of eccentricity of the hollow billet in step (d) includes determining a pattern of a wall thickness (s) of the hollow billet as a function of a longitudinal coordinate (z) in a direction of the longitudinal axis of the hollow billet and an angle Φ around the longitudinal axis in accordance with the relationship

$S(\Phi, z) = s_o(z) + s_1(z) \cos(\Phi+\delta(z))$

where s_o is the mean wall thickness of the hollow billet, s_1 is the wall thickness amplitude superimposed on the mean wall thickness s_o and δ is the angular position as a function of the longitudinal coordinate (z) of the wall thickness, and subjecting the result to a Fourier transformation to obtain a course of the wall thickness as a function of the longitudinal coordinate (z) and the angular position Φ to an approximation of the form

$s(\Phi,z) \approx s_o^* + \Sigma s_{i,1} \cos(\Phi + 2\pi p_i z + \xi_{i,1})$

wherein s_o^* and $s_{i,1}$ are determined Fourier coefficients in the thickness of the hollow billet by a summation (i) over the number (n) of the elements of Fourier series and p_i and $\xi_{i,1}$ represent the Fourier coefficients for the pitch and for the starting position angle from summation (i) over the number (n) of the Fourier series elements, the frequency transformation being a consideration of the movement of the measuring head.

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15. The apparatus defined in claim 14 wherein said device is located at the outlet of an inclined-roll rolling mill.

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19. The apparatus defined in claim 18 wherein said measuring device includes means for generating an ultrasonic pulse in said hollow billet and comprising a flash lamp pumped Nd:YAG laser.

20. The apparatus defined in claim 19 wherein said measuring device includes a means for measuring a time interval between two ultrasonic echo signals traversing a wall thickness of said hollow billet and including a diode pumped Nd:YAG laser and, has an optical analyzer, a Fabry-Perot interferometer.

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15. The apparatus defined in claim 14 wherein said device is located at the outlet of an inclined-roll rolling mill.

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9. An **apparatus** for determining eccentricity (e) of a hollow billet in the course of rolling, comprising:

a path over which a hollow billet is advanced in a direction along a longitudinal axis (L) of the hollow billet;

at least one measuring device provided along said path to detect the wall thickness (s) of the hollow billet at a position (z) along its length and at an angular position (Φ) thereof or a position along its circumference whereby a course of the eccentricity (e) of the hollow billet can be approximated by the course of the wall thickness (s) as a function of the longitudinal (z) extending along the longitudinal axis (L) of the hollow billet and the angle (Φ) about the longitudinal axis in accordance with the relationship:

$e \alpha s(\Phi,z) = s_o(z) + s_1(z) \cos(\Phi+\delta(z))$

where s_o is the mean wall thickness of the hollow billet, s_1 is the wall thickness amplitude superimposed on the mean wall thickness and δ is the angular position as a function of the longitudinal coordinate (z); and

a computer connected with said at least one measuring device and receiving a number of wall thickness measurements upon passage of the hollow billet past said measuring device, said computer being programmed to subjecting the measured values based upon said approximation to a Fourier transformation to obtain a functional course of the wall thickness (s) as a function of the longitudinal coordinate (z) and the angle (Φ) of the form:

$s(\Phi,z) \approx s_o^* + \Sigma s_{i,1} \cos(\Phi + 2\pi p_i z + \xi_{i,1})$

where s_o^* and $s_{i,1}$ are determined Fourier coefficients for the wall thickness of the hollow billet upon summation (i) over the number (n) of Fourier series elements and whereby p_i and $\xi_{i,1}$ are the Fourier coefficients for a pitch of the course of the eccentricity and for the starting angular position of the measurements upon summation (i) over the number (n) of Fourier series elements.

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10. The apparatus defined in claim 9 wherein said at least one measuring device is located at an outlet of a rolling mill.

11. The apparatus defined in claim 10 wherein said rolling mill is an inclined-roll mill.

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12. The apparatus defined in claim 9 wherein said at least one measuring device includes an ultrasonic wall thickness measurement unit having a device for launching an ultrasonic signal into a surface of said hollow billet.

13. The apparatus defined in claim 12 wherein said ultrasonic wall thickness measurement unit includes a device for measuring a time interval between two ultrasonic signals including an echo signal produced by launching an ultrasonic signal into said surface.

14. The apparatus defined in claim 13 wherein said ultrasonic wall thickness measurement unit includes a laser and an optical analyzer.

15. The apparatus defined in claim 14 wherein said laser is an Nd:YAG laser.

16. The apparatus defined in claim 13 wherein said optical analyzer is a Fabry-Perot interferometer.

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17. The apparatus defined in claim 9 wherein the measurements are taken upstream of a rolling mill following an inclined-roll mill.

18. The apparatus defined in claim 17 wherein the measurements are taken at an upstream side of a conti-rolling line.

19. The apparatus defined in claim 17 wherein the measurements are taken at an upstream side of a press-bench rolling line.

Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to one having ordinary skill in the art to have inserted a mandrel into a hollow billet in the course of rolling containing a measuring device having sensor 21 additionally inside a hollow billet and sensor 20 juxtaposing with sensor 21 as shown in the figure 3 to allow much faster mill setups for determining eccentricity of the hollow billet in the course of rolling at the rolling mill resulting wall thickness variations that should be minimized and controlled to respect specifications.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 4,027,527 to Bennett et al. U.S. Patent No. 6,633,384 to Drake, Jr. et al.

U.S. Patent No. 6,057,927 to Levesque et al.

Laser Ultrasonic System for On-line Steel Tube Gauging, Monchalin et al., date unknown

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan M Le whose telephone number is (571) 272-2276. The examiner can normally be reached on Monday through Friday from 9:00 A.M. to 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Toan Le

August 30, 2004

John Barlow
Supervisory Patent Examiner
Technology Center 2800